

**Title: Supplementary movie 1:**

**Description: Visible photodamage caused by over illumination.** A lymph node explant imaged with an inappropriate adaptive illumination scheme. The parts of the cortex on the bottom of the frame receive too much excitation power, resulting in the parenchyma bursting out from the lymph node cortex.

**Title: Supplementary movie 2:**

**Description: Standard candle training data.** Inguinal lymph node seeded with GFP lymphocytes imaged with randomized excitation power to generate standard candle training data

**Title: Supplementary movie 3:**

**Description: ex vivo lymph node imaged with adaptive excitation.** Inflamed mediastinal lymph node with adoptively transferred lymphocytes labelled with GFP, RFP, eFluor670 imaged using adaptive excitation.

**Title: Supplementary movie 4:**

**Description: LAMI applied to an irregularly shaped lymph node.** A multi-lobed, aspherical lymph node imaged by LAMI. Clear contrast visible throughout the volume, with no evidence of over- excitation or photo-damage. Lymph node contains endogenous XCR1-Venus cells (yellow) and adoptively transferred lymphocytes with GFP (green) and eFluor670 (pink).

**Title: Supplementary movie 5:**

**Description: Correction of transverse movements within Z-stack.** single Z-stack with transverse movement artifact caused by breathing (left) and with optimized corrections (right)

**Title: Supplementary movie 6:**

**Description: 3D volume timelapse before and after motion correction and registration.** Timelapse before and after registration, motion corrections and stitching

**Title: Supplementary movie 7:**

**Description: Cleared lymph node (no immunization).** Cleared lymph node showing positioning of XCR1+ cells (yellow) when in uninfected condition

**Title: Supplementary movie 8:**

**Description: Cleared lymph node 24 hours after immunization.** Cleared lymph node showing positioning of XCR1+ cells (yellow) 24 hours after immunization with LPS

**Title: Supplementary movie 9:**

**Description: In vivo immune response 24 hours after immunization.**

**Title: Supplementary movie 10:**

**Description: In vivo whole lymph node dynamics 5 hours after immunization**

**Title: Supplementary movie 11:**

**Description: In vivo cell dynamics 5 hours after immunization and tracked dendritic cells showing clustering behaviour**